

WHAT IS CLAIMED IS:

1. A method for producing a silica gel, which comprises hydrolyzing a silicon alkoxide and subjecting the resulting hydrogel to a hydrothermal treatment substantially without aging it.
- 5        2. The method for producing a silica gel according to Claim 1, wherein a hydrogel having a breaking stress of at most 6 MPa is subjected to the hydrothermal treatment.
3. The method for producing a silica gel according to Claim 1, wherein the hydrothermal treatment is carried out at a temperature of from 50 to 150°C for from  
10    1 to 10 hours.
4. The method for producing a silica gel according to Claim 1, wherein an ammonia water is used for the hydrothermal treatment.
5. The method for producing a silica gel according to Claim 1, wherein an obtained silica gel is a silica gel which has the following characteristics:  
15        (a) the pore volume is from 0.6 to 1.6 ml/g,  
             (b) the specific surface area is from 300 to 900 m<sup>2</sup>/g,  
             (c) the mode diameter (Dmax) of pores is less than 20 nm,  
             (d) the volume of pores having diameters within ±20% of Dmax is at least  
             50% of the total pore volume,  
20        (e) it is amorphous, and  
             (f) the content of metal impurities is at most 500 ppm.
6. The method for producing a silica gel according to Claim 1, wherein

hydrolysis of said silicon alkoxide is conducted in the absence of a template.

7. A silica gel, produced by a process comprising hydrolyzing a silicon alkoxide and subjecting the resulting hydrogel to a hydrothermal treatment substantially without aging it.

5        8. The silica gel according to Claim 7, wherein a hydrogel having a breaking stress of at most 6 MPa is subjected to the hydrothermal treatment.

9. The silica gel according to Claim 7, wherein the hydrothermal treatment is carried out at a temperature of from 50 to 150°C for from 1 to 10 hours.

10       10. The silica gel according to Claim 7, wherein an ammonia water is used for the hydrothermal treatment.

11. The silica gel according to Claim 7, wherein an obtained silica gel is a silica gel which has the following characteristics:

(a) the pore volume is from 0.6 to 1.6 ml/g,

(b) the specific surface area is from 300 to 900 m<sup>2</sup>/g,

15       (c) the mode diameter (Dmax) of pores is less than 20 nm,

(d) the volume of pores having diameters within ±20% of Dmax is at least 50% of the total pore volume,

(e) it is amorphous, and

(f) the content of metal impurities is at most 500 ppm.

20       12. The silica gel according to Claim 11, wherein the pore volume is from 0.8 to 1.6 ml/g.

13. The silica gel according to Claim 11, wherein the specific surface area is

from 400 to 900 m<sup>2</sup>/g.

14. The silica gel according to Claim 11, wherein the mode diameter (D<sub>max</sub>) is at least 2 nm.

15. The silica gel according to Claim 11, wherein the volume of pores having diameters within  $\pm 20\%$  of D<sub>max</sub> is at least 60% of the total pore volume.

16. The silica gel according to Claim 11, wherein the content of metal impurities is at most 10 ppm.

17. The silica gel according to Claim 11, wherein the content of metal impurities is at most 1 ppm.

10 18. The silica gel according to Claim 11, wherein the differential pore volume at the mode diameter (D<sub>max</sub>) is from 5.0 to 12.0 ml/g.

19. The silica gel according to Claim 11, wherein the value of Q<sub>4</sub>/Q<sub>3</sub> in solid state Si-NMR is at least 1.3.

15 20. The silica gel according to Claim 7, wherein hydrolysis of said silicon alkoxide is conducted in the absence of a template.

21. The silica gel according to Claim 11, wherein hydrolysis of said silicon alkoxide is conducted in the absence of a template.

22. A silica gel which has the following characteristics:

- (a) the pore volume is from 0.6 to 1.6 ml/g,
- 20 (b) the specific surface area is from 300 to 900 m<sup>2</sup>/g,
- (c) the mode diameter (D<sub>max</sub>) of pores is less than 20 nm,
- (d) the volume of pores having diameters within  $\pm 20\%$  of D<sub>max</sub> is at least

50% of the total pore volume,

(e) it is amorphous, and

(f) the content of metal impurities is at most 500 ppm.

23. The silica gel according to Claim 22, wherein the pore volume is from 0.8  
5 to 1.6 ml/g.

24. The silica gel according to Claim 22, wherein the specific surface area is  
from 400 to 900 m<sup>2</sup>/g.

25. The silica gel according to Claim 22, wherein the mode diameter (Dmax)  
is at least 2 nm.

10 26. The silica gel according to Claim 22, wherein the volume of pores having  
diameters within  $\pm 20\%$  of Dmax is at least 60% of the total pore volume.

27. The silica gel according to Claim 22, wherein the content of metal  
impurities is at most 10 ppm.

28. The silica gel according to Claim 22, wherein the content of metal  
15 impurities is at most 1 ppm.

29. The silica gel according to Claim 22, wherein the differential pore volume  
at the mode diameter (Dmax) is from 5.0 to 12.0 ml/g.

30. The silica gel according to Claim 22, wherein the value of Q4/Q3 in solid  
state Si-NMR is at least 1.3.

20 31. The silica gel according to Claim 22, which is produced by means of a  
step of hydrolyzing a silicon alkoxide.